

Last Modified: 12-04-2024	6.11:8.1.0	Doc ID: RM100000002909Y
Model Year Start: 2023	Model: Prius Prime	Prod Date Range: [12/2022 -]
Title: THEFT DETERRANT / KEYLESS ENTRY: SMART KEY SYSTEM (for Start Function): B279986; Engine Immobiliser System Signal (Some Circuit Quantity, Reported via Serial Data) Invalid; 2023 - 2024 MY Prius Prius Prime [12/2022 -]		

DTC	B279986	Engine Immobiliser System Signal (Some Circuit Quantity, Reported via Serial Data) Invalid
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DESCRIPTION

If there is a communication malfunction between the hybrid vehicle control ECU and ID code box (immobiliser code ECU), or when the communication ID codes do not match, the hybrid vehicle control ECU stores this DTC.

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	DTC OUTPUT FROM	PRIORITY	NOTE
B279986	Engine Immobiliser System Signal (Some Circuit Quantity, Reported via Serial Data) Invalid	<p>Either of the following conditions is met (1 trip detection logic*):</p> <ul style="list-style-type: none"> A malfunction is detected in the communication or communication lines between the hybrid vehicle control ECU and ID code box (immobiliser code ECU). The communication ID codes of the hybrid vehicle control ECU and ID code box (immobiliser code ECU) do not match. 	<ul style="list-style-type: none"> ID code box (immobiliser code ECU) Hybrid vehicle control ECU Wire harness or connector 	Hybrid Control	A	<p>DTC output confirmation operation (Perform either of the following):</p> <ul style="list-style-type: none"> Start the hybrid control system and wait for 10 seconds. If there is a malfunction, the hybrid control system will stop (communication begins within 3 seconds of the hybrid control system start operation being performed, and DTCs are stored after 6 seconds). Connect the cable to the negative (-) auxiliary battery terminal, start the hybrid control system and wait for 10 seconds (communication

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	DTC OUTPUT FROM	PRIORITY	NOTE
						begins within 3 seconds of the ignition switch being turned to ON, and DTCs are stored after 6 seconds).

*: Only output while a malfunction is present.

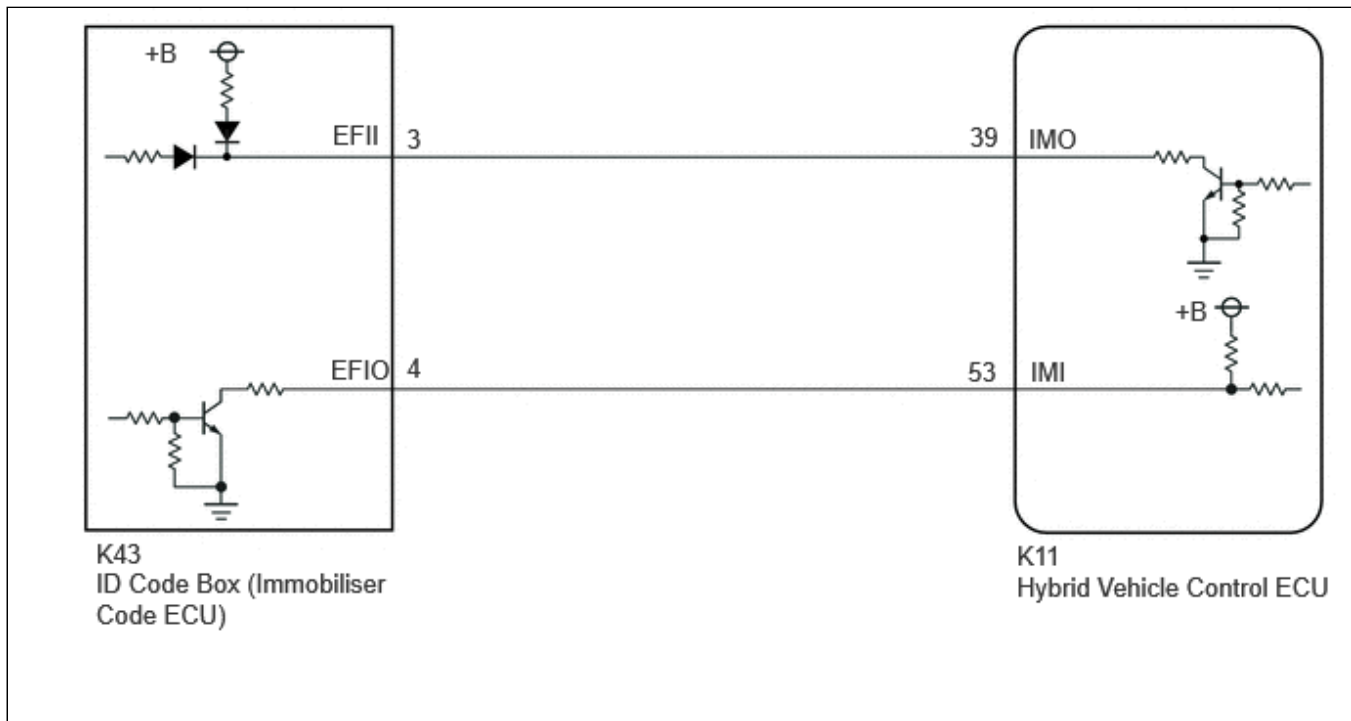
Vehicle Condition and Fail-safe Operation when Malfunction Detected

VEHICLE CONDITION WHEN MALFUNCTION DETECTED	FAIL-SAFE OPERATION WHEN MALFUNCTION DETECTED
Hybrid control system cannot be started	-

Related Data List and Active Test

DTC NO.	DATA LIST AND ACTIVE TEST
B279986	-

WIRING DIAGRAM



CAUTION / NOTICE / HINT

NOTICE:

- When using the GTS with the ignition switch off, perform lock and unlock operations using the door control switch of the multiplex network master switch assembly at intervals of 1.5 seconds or less until communication between the GTS and the vehicle begins, and then select the vehicle model manually.

Then select Model Code "KEY REGIST" under manual mode and enter the following menus: Body Electrical / Smart Key(CAN). While using the GTS, periodically perform lock and unlock operations using the door control switch of the multiplex network master switch assembly at intervals of 1.5 seconds or less to maintain communication between the GTS and the vehicle.

- The smart key system (for Start Function) uses the LIN communication system and CAN communication system. Inspect the communication function by following How to Proceed with Troubleshooting. Troubleshoot the smart key system (for Start Function) after confirming that the communication systems are functioning properly.

Click here [INFO](#)

- Before replacing the hybrid vehicle control ECU or ID code box (immobiliser code ECU), refer to Registration.

Click here [INFO](#)

- After performing repairs, confirm that no DTCs are output by performing "DTC Output Confirmation Operation".
- When the hybrid vehicle control ECU is replaced, update the ECU security key.

Click here [INFO](#)

HINT:

When DTC B279986 and the certification ECU (smart key ECU assembly) DTC are output simultaneously, first perform troubleshooting for the certification ECU (smart key ECU assembly) DTC.

PROCEDURE

1. REGISTER ECU COMMUNICATION ID

(a) Register the ECU communication ID code.

HINT:

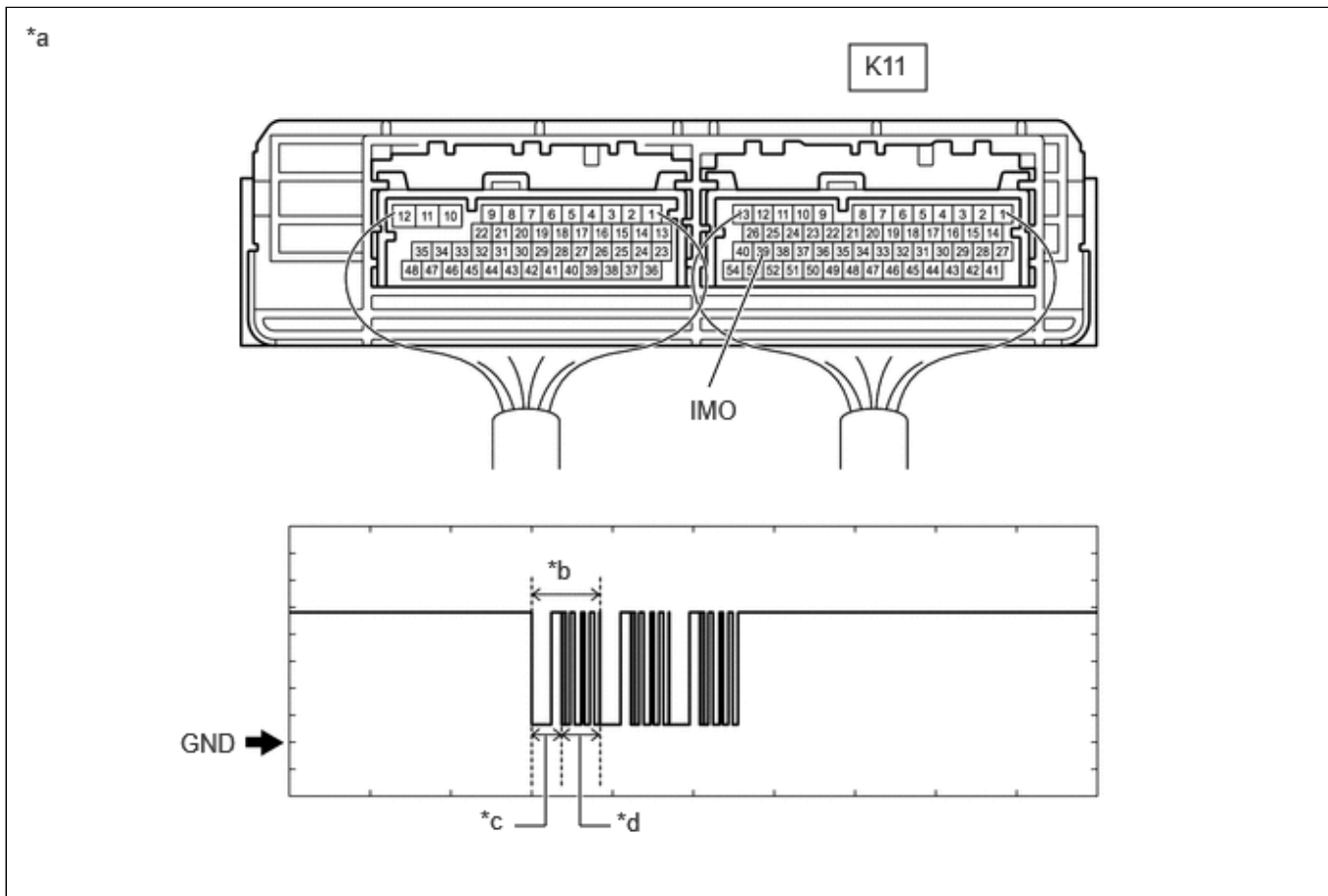
Click here [INFO](#)

NEXT



2. CHECK HYBRID VEHICLE CONTROL ECU (TERMINAL IMO)

(a) Using an oscilloscope, check the waveform.



*a	Component with harness connected (Hybrid Vehicle Control ECU)	*b	Waveform
*c	Approximately 160 ms.	*d	Approximately 270 ms.

OK:



[Click Location & Routing\(K11\)](#)
[Click Connector\(K11\)](#)

TESTER CONNECTION	CONDITION	TOOL SETTING	SPECIFIED CONDITION
K11-39 (IMO) - Body ground	Within 3 seconds of hybrid control system start or within 3 seconds of ignition switch turned to ON after cable disconnected and reconnected to auxiliary battery	2 V/DIV., 500 ms./DIV.	Pulse generation (See waveform)

RESULT	PROCEED TO
Normal waveform	A
Terminal IMO stuck low (2.4 V or less)	B
Waveform not output, has abnormal wavelength or shape or Terminal IMO stuck high (12V)	C

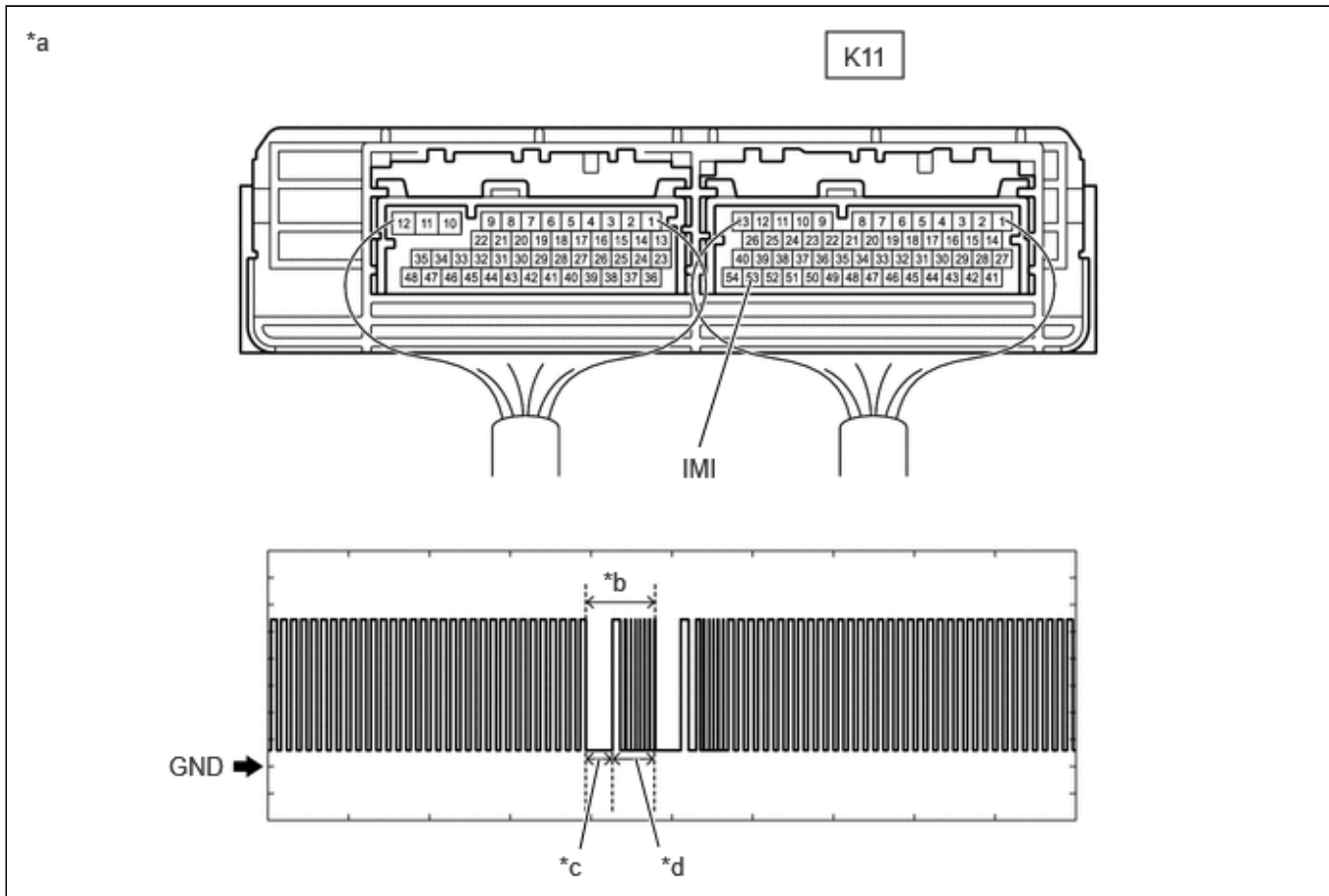
B ▶ GO TO STEP 7

C ▶ GO TO STEP 9

A
▼

3. CHECK HYBRID VEHICLE CONTROL ECU (TERMINAL IMI)

(a) Using an oscilloscope, check the waveform.



*a	Component with harness connected (Hybrid Vehicle Control ECU)	*b	Waveform
*c	Approximately 160 ms.	*d	Approximately 270 ms.

OK:



[Click Location & Routing\(K11\).](#)

[Click Connector\(K11\).](#)

TESTER CONNECTION	CONDITION	TOOL SETTING	SPECIFIED CONDITION
K11-53 (IMI) - Body ground	Within 3 seconds of hybrid control system start or within 3 seconds of ignition switch turned to ON after cable disconnected and reconnected to auxiliary battery	2 V/DIV., 500 ms./DIV.	Pulse generation (See waveform)

NG ► **GO TO STEP 6**

OK



4.	REGISTER ECU COMMUNICATION ID
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(a) Register the ECU communication ID code.

HINT:

Click here [INFO](#)

NEXT



5.	CHECK WHETHER HYBRID CONTROL SYSTEM STARTS
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Pre-procedure1

(a) Using an electrical key transmitter sub-assembly which is registered to the vehicle, turn the ignition switch to ON.

Procedure1

(b) Check that the hybrid control system starts 5 seconds after the ignition switch turned to ON.

OK:

Hybrid control system starts normally.

Post-procedure1

(c) None

OK ► **END (ECU COMMUNICATION ID HAS NOT BEEN REGISTERED)**

NG ► **REPLACE HYBRID VEHICLE CONTROL ECU** [INFO](#)

6.	CHECK HARNESS AND CONNECTOR (ID CODE BOX (IMMOBILISER CODE ECU) - HYBRID VEHICLE CONTROL ECU)
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Pre-procedure1

- (a) Disconnect the K43 ID code box (immobiliser code ECU) connector.
- (b) Disconnect the K11 hybrid vehicle control ECU connector.

Procedure1

- (c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:



[Click Location & Routing\(K43,K11\)](#)

[Click Connector\(K43\)](#)

[Click Connector\(K11\)](#)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
K43-4 (EFIO) - K11-53 (IMI)	Always	Below 1 Ω	Ω
K43-4 (EFIO) or K11-53 (IMI) - Other terminals and body ground	Always	10 k Ω or higher	k Ω

Post-procedure1

- (d) None

OK **REPLACE ID CODE BOX (IMMOBILISER CODE ECU)**

NG **REPAIR OR REPLACE HARNESS OR CONNECTOR**

7.	CHECK HYBRID VEHICLE CONTROL ECU
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Pre-procedure1

- (a) Disconnect the K11 hybrid vehicle control ECU connector.

Procedure1

- (b) Measure the voltage according to the value(s) in the table below.

Standard Voltage:



[Click Location & Routing\(K11\)](#)

[Click Connector\(K11\)](#)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
K11-39 (IMO) - Body ground	Ignition switch turned to ON using registered electrical key transmitter sub-assembly	Terminal IMO stuck low (2.4 V or less)
		Terminal IMO stuck high (12 V) or abnormal waveform

RESULT	PROCEED TO
Terminal IMO stuck low (2.4 V or less)	A
Terminal IMO stuck high (12 V) or abnormal waveform	B

Post-procedure1

(c) None

B  **REPLACE HYBRID VEHICLE CONTROL ECU** 

A

8.	CHECK HARNESS AND CONNECTOR (ID CODE BOX (IMMOBILISER CODE ECU) - HYBRID VEHICLE CONTROL ECU)
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Pre-procedure1

(a) Disconnect the K43 ID code box (immobiliser code ECU) connector.

Procedure1

(b) Measure the resistance according to the value(s) in the table below.



Standard Resistance:

[Click Location & Routing\(K43,K11\)](#)[Click Connector\(K43\)](#)[Click Connector\(K11\)](#)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
K43-3 (EFII) - K11-39 (IMO)	Always	Below 1 Ω	Ω
K43-3 (EFII) or K11-39 (IMO) - Other terminals and body ground	Always	10 k Ω or higher	k Ω
K43-4 (EFIO) - K11-53 (IMI)	Always	Below 1 Ω	Ω
K43-4 (EFIO) or K11-53 (IMI) - Other terminals and body ground	Always	10 k Ω or higher	k Ω

Post-procedure1

(c) None

OK  **REPLACE ID CODE BOX (IMMOBILISER CODE ECU)** 

NG  **REPAIR OR REPLACE HARNESS OR CONNECTOR**

9.

CHECK HARNESS AND CONNECTOR (ID CODE BOX (IMMOBILISER CODE ECU) - HYBRID VEHICLE CONTROL ECU)

Pre-procedure1

- (a) Disconnect the K43 ID code box (immobiliser code ECU) connector.
- (b) Disconnect the K11 hybrid vehicle control ECU connector.

Procedure1

- (c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:


[Click Location & Routing\(K11,K43\)](#)
[Click Connector\(K11\)](#)
[Click Connector\(K43\)](#)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
K11-39 (IMO) - K43-3 (EFII)	Always	Below 1 Ω	Ω
K11-39 (IMO) or K43-3 (EFII) - Other terminals and body ground	Always	10 k Ω or higher	k Ω

Post-procedure1

- (d) None

OK **REPLACE HYBRID VEHICLE CONTROL ECU**
NG **REPAIR OR REPLACE HARNESS OR CONNECTOR**
